(19)日本国特許庁（ＪＰ）　(12) **公開特許公報（Ａ）**　(11)特許出願公開番号
特開2001－42451
（P2001－42451A）
(43)公開日　平成13年２月16日(2001.2.16)

(51)Int.Cl.'	識別記号	ＦＩ		テーマコード'（参考）
Ｇ０３Ｂ　27/46		Ｇ０３Ｂ　27/46		
Ｂ４１Ｊ　29/38		Ｂ４１Ｊ　29/38	Ｚ	
29/42		29/42	Ｆ	
Ｇ０６Ｆ　3/12		Ｇ０６Ｆ　3/12	Ａ	
			Ｄ	

審査請求　未請求　請求項の数10　ＯＬ　（全 18 頁）

(21)出願番号　特願2000－148027(P2000－148027)
(22)出願日　平成12年５月19日(2000.5.19)
(31)優先権主張番号　特願平11－141488
(32)優先日　平成11年５月21日(1999.5.21)
(33)優先権主張国　日本（ＪＰ）

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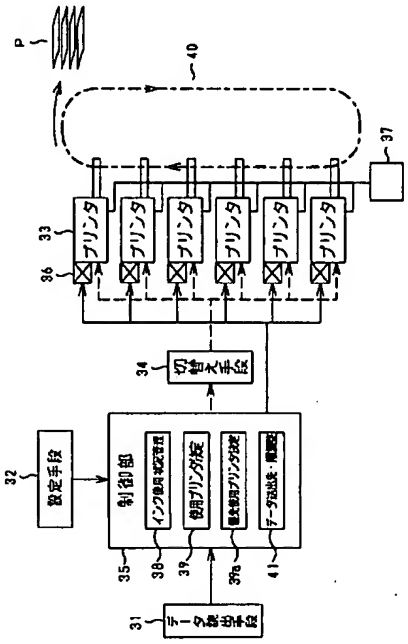
(54)【発明の名称】　デジタルプリント機

(57)【要約】
【課題】　デジタルカメラの画像データをサービスとしてプリントする装置は、装置本体の価格が高価で操作も容易でなくプリントに要する所要時間も長いといった課題があった。
【解決手段】　デジタルカメラの画像データを読み出すデータ読出手段(３１)と、焼き増し枚数などを設定するための設定手段(３２)と、複数台数のプリンタ(３３)と、複数台数のプリンタから使用するプリンタを選択するプリンタ切替え手段(３４)と、設定手段(３２)で設定した情報に基づき、プリンタ切替え手段(３４)に所定の制御信号を送出するとともに、所定のプリンタ(３３)に画像データを送出する制御部(３５)とからなり、読み出した前記画像データを処理するための画像処理回路(３６)を各プリンタ(３３)に持たせた。



PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2001-042451

(43)Date of publication of application : 16.02.2001

(51)Int.Cl. G03B 27/46
B41J 29/38
B41J 29/42
G06F 3/12

(21)Application number : 2000-148027

(22)Date of filing : 19.05.2000

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(30)Priority

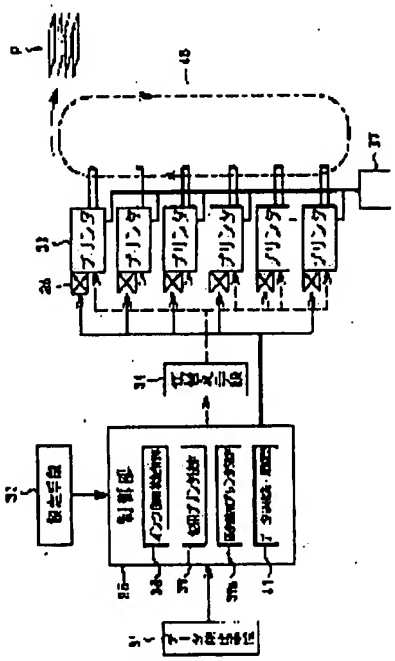
Priority number : 11141488 Priority date : 21.05.1999 Priority country : JP

(54) DIGITAL PRINTER

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a digital printer which is adequate to be set on a convenience store, etc., and which can automatically perform printing processing in a short time only by inserting a recording medium.

SOLUTION: This digital printer is constituted of a data reading means 31 for reading the image data of a digital camera, a setting means 32 for setting the number of extra printed sheets plural printers 33, a printer switching means 34 selecting the printer to be used from the plural printers, and a control part 35 for transmitting a specified control signal to the means 34 and also transmitting the image data to the specified printer 33 based on information set by the means 32; and an image processing circuit 36 for processing the read image data is provided in each of the printers 33.



LEGAL STATUS

[Date of request for examination] 07.03.2003

[Date of sending the examiner's decision of rejection] 01.03.2005

[Kind of final disposal of application other than the examiner's decision of rejection or application converted

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1. Untranslatable words are replaced with asterisks (****).
2. Texts in the figures are not translated and shown as it is.

Translated: 04:23:24 JST 09/06/2007
Dictionary: Last updated 07/20/2007 / Priority: 1. Information communication technology (ICT) / 2. Electronic engineering / 3. JIS (Japan Industrial Standards) term

FULL CONTENTS

[Claim(s)]

[Claim 1] The data read-out means (31) which is the digital printed matter machine which prints out the image data read from the storage using a printer, and reads image data from a storage, The setting means (32) for setting up extra copy number of sheets etc., and the printer (33) of two or more set number, While sending out a predetermined control signal to a printer change means (34) based on the information set up with a printer change means (34) to choose the printer used from the printer of two or more set number, and the setting means (32) The digital printed matter machine characterized by giving the image processing circuit (36) for consisting of a control section (35) which sends out image data to the selected printer (33), and processing said read image data to each printer (33).

[Claim 2] The digital printed matter machine [equipped with printer determination means (39) used to determine the printer to be used so that it may be used on the average between each above-mentioned printer] according to claim 1.

[Claim 3] A digital printed matter machine [equipped with the ink changer (37) which bundles up the ink used by each above-mentioned printer, and is exchanged for reserve ink] according to claim 2.

[Claim 4] The digital printed matter machine [equipped with a priority use printer determination means (39a) to determine the printer used that the printer beforehand specified in each above-mentioned printer is used preferentially] according to claim 1.

[Claim 5] [the above-mentioned priority use printer determination means (39a)] Set up the start printer certainly used at the time of a print, and a start printer For example, when it is considered as the printer of NO.1, The digital printed matter machine according to claim 4 which sets the printer of NO.2 as a start printer when it is always made to perform a print from the printer of the NO.1 and it becomes impossible to use the printer.

[Claim 6] The digital printed matter machine [equipped with the interface which enabled it to

perform operating procedure for printing according to the directions shown with a drop] according to claim 1 to 5.

[Claim 7] The digital printed matter machine according to claim 1 to 6 whose printer is the thing of a sublimated type heat imprint method.

[Claim 8] When it has the recovery mechanism (40) in which the photographs printed by each printer are collected and prints in parallel by the printer of two or more set number, The digital printed matter machine according to claim 1 to 7 which offered the sending-out place and the favorable-condition ready means for scheduling the sending-out place and the order of sending out of image data which are supplied to each printer so that photographs may be collected in order of photography (41).

[Claim 9] The digital printed matter machine [equipped with the function which reads the image data of storage into a digital camera, and is written in a desired storage] according to claim 1 to 8.

[Claim 10] The data read-out means (31) which is the digital printed matter machine which prints out the image data read from the storage using a printer, and reads image data from a storage, The setting means (32) for setting up extra copy number of sheets etc., and the printer (33) of two or more set number, While sending out a predetermined control signal to a printer change means (34) based on the information set up with a printer change means (34) to choose the printer used from the printer of two or more set number, and the setting means (32) The digital printed matter machine characterized by having a priority use printer determination means (39a) to determine the printer used that the printer which consisted of a control section (35) which sends out image data to the selected printer (33), and was beforehand specified in each above-mentioned printer is used preferentially.

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the digital printed matter machine which prints out automatically the image data read from the storage.

[0002]

[Description of the Prior Art] The digital camera which saves in memory the image data photoed with the CCD image sensor is spreading quickly. The image data saved in memory can be transmitted to a personal computer, and can be outputted with a color printer. However, print-out is difficult for people without a personal computer, and a person poor at doing such work. Then, the DPE service (Electron DPE is called hereafter) which performs a print from the electronic data outputted from a digital still camera etc. came to be provided.

[0003] Memory is removed from a camera body, and if it brings to the photo shop treating Electron DPE, image data will be read from memory at a terminal, and it will be transmitted to a center on-line, and will be printed on usual printing paper in the center. The done print is delivered by the original store. In this system, it takes several days by result and conflicts in respect of the speed nature which is one of the features of a digital camera of taking a photograph and seeing immediately.

[0004]

[Problem to be solved by the invention] Then, if it brings to a photo shop, the thing it enabled it to output with a high-definition color printer on that spot is also developed. However, since printing out two or more sheets took time, and operation was not easy and it was not able to carry out in person even if it has two or more printers, the technical problem that a printing charge became high in respect of personnel expenses occurred.

[0005] This invention aims at offering the digital printed matter machine which enabled it to perform printing processing automatically [printing processing] for a short time only by being made in order to solve the technical problem mentioned above, and it being suitable for the installation in a convenience store etc., and inserting a storage.

[0006]

[Means for solving problem] The data read-out means (31) which the digital printed matter machine of this invention is a digital printed matter machine which prints out the image data read from the storage using a printer as shown in drawing 1 , and reads image data from a storage, The setting means (32) for setting up extra copy number of sheets etc., and the printer (33) of two or more set number, While sending out a predetermined control signal to a printer change means (34) based on the information set up with a printer change means (34) to choose the printer used from the printer of two or more set number, and the setting means (32) It is characterized by giving the image processing circuit (36) for consisting of a control section (35) which sends out image data to the selected printer (33), and processing said read image data to each printer (33).

[0007] So that it may be used on the average between each above-mentioned printer as shown in Claim 2 It can have printer determination means (39) used to determine the printer to be used, and a priority use printer determination means (39a) to determine the printer used that the printer beforehand specified in each above-mentioned printer is preferentially used as shown in Claim 4.

[0008]

[Mode for carrying out the invention] Drawing 2 shows the appearance of the digital printed matter machine 50 of this invention. 1 shows the loading slot of the image data reader which reads image data from various storages, 3 is a liquid crystal display, a touch panel 4 is stuck on the screen of this liquid crystal display 3, and a user does the setting input of the extra copy

number of sheets etc. through this touch panel 4. Drawing 3 shows the digital printed matter machine 50 made into another form of this invention, and serves as a desk type divided into Display 51a, a control unit 51b, and the printer section 51c.

[0009] Drawing 4 is the control-block figure having shown the 1st embodiment in such a digital printed matter machine 50. 11 is an image data reader which reads image data from various storages, and is equipped with the drive for the reader for a multimedia (MM) card, the Smart Media (SM) card, and a compact flash (registered trademark) (CF) memory card, and an MO disk.

[0010] 12 is the main part section of a notebook computer, and [built-in ROM] The control program which performs the ink operating condition management tool (38) mentioned above, and the printer determination means (39) used, and a sending-out place and a favorable-condition ready means (41) by software is stored. Moreover, the interface which indicates the operating procedure when printing with this machine by a menu with a drop 3, and enabled it to input a desired menu by a touch panel 4 is offered. The above-mentioned image data reader 11 is connected through the SCSI card 12a with which the PC Card slot with which the main part section 12 of this notebook computer was equipped was equipped. Moreover, this PC Card slot can be equipped with a modem card 12b if needed, and online connection of this machine can be made through a public circuit in a maintenance company. The liquid crystal display 3 is connected to the external monitor terminal of the main part section 12 of a notebook computer, and a touch panel 4 is connected to a serial port.

[0011] 13 is a controller connected through the parallel port of the main part section 12 of a notebook computer, and Centronics, and an RS232C port, and [14] It is the printer sharer which chooses the printer operated based on instructions of a controller 13 out of the color printer 15 of 12 sublimated type heat imprint methods. Each color printer 15 contains the image processing circuit for developing the compressed image data supplied from a printer controller 13. 16 is an ink changer which exchanges for reserve ink the ink which became empty with the color printer 15. By a sublimated type printer, if printing number of sheets was decided and convention number of sheets is printed regardless of combination of the color to print, the clearing work of ink is needed.

[0012] In this digital printed matter machine, if the printer 15 used by control [section / 12 / of a notebook computer / main part] is determined and ink is lost by all the printers 15 so that it may be used on the average by each printer 15, it will bundle up by the ink changer 16 and will exchange for reserve ink. An ink piece is avoidable if it is made to fill up reserve ink at this time. When it exchanges for reserve ink, you may be made to notify the company of a maintenance of a maintenance important point through said modem card 12b.

[0013] 17 is a recovery subsystem which collects the photographs P printed out by each printer 15 to one place. The main part section 12 of a notebook computer has the scheduling function

in which drawing 5 and a procedure as shown in the flow of drawing 6 adjust the sending-out place and its order of sending out to a printer 15 of each image data so that the collected photographs may overlap in order of photography (two or more sheets of the same picture pile up).

[0014] At Step S51, the print number of sheets per printer (minimum) is called for by the division of print number of sheets / number of an operation printer. At Step S52, the complementary Rika fraction number of sheets at the time of the division of print number of sheets / number of an operation printer is called for. At Step S53, the i-th printer is set as a start printer (printer worked first), and 0 is set as counted value j of a printer.

[0015] At Step S54, it is judged whether the value of j is more than the number of operation printers. When the value of j is more than the number of operation printers, progress to Step S71, but when that is not right, it progresses to Step S55. It is judged whether the i-th printer is an error printer (the print by the ink piece or a form piece is impossible), and when it progresses to Step S59 when it is not an error printer, but it is an error printer, it progresses to Step S56.

[0016] At Step S56, it is judged whether the value of i is under fraction number of sheets, and the value added to the print number of sheets per set one time as print number of sheets of the i-th printer at Step S57 when it was under fraction number of sheets is adopted. When it is not under fraction number of sheets, the print number of sheets per set is adopted as print number of sheets of the i-th printer at Step S58.

[0017] At the following step S59, the value of i and j is incremented, respectively. At Step S60, it is judged whether the value of i is under fraction number of sheets, when it is not under fraction number of sheets, it returns to Step S54, and at the time under of fraction number of sheets, the value of i is set as 1 at Step S61, and it returns to Step S54.

[0018] At Step S71, the value of j is set as 0 and the j-th printer is set as a start printer. At Step S72, it is judged whether the value of i is more than the number of operation printers. When this flow is completed now when the value of i is more than the number of operation printers, but it progresses to Step S73 when that is not right, it is judged whether the j-th printer is an error printer, it progresses to Step S78 when it is not an error printer, but it is an error printer, it progresses to Step S74.

[0019] At Step S74, j is set as the array (i) of Printer No. At Step S75, the picture No put in order is skipped by the print number of sheets from a highest rung printer (No1) to the j-th printer. At Step S76, the picture No obtained by having skipped to the print picture No array (i) is set up.

[0020] At Step S77, the value of i is incremented, and in Step S78, the following printer is updated by the value of j and it returns to Step S72 after this.

[0021] Drawing 7 is using the printer 15 of NO.1 - NO.8 at the time of the last print, and shows

the example of processing when there is a print request of six sheets of the photography pieces 1-6 this time. NO.9 - NO.12, and NO.1 - NO.2 are used in this case so that ink may average and may be consumed by each printer 15.

[0022] At this time, the image data of a piece 1 is not supplied to the printer 15 of NO.9. The image data of a piece 3 is supplied, the image data of a piece 4 - a piece 8 is supplied to the printer 15 of NO.10 - NO.12, respectively, and the image data of a piece 1 and a piece 2 is supplied to the printer 15 of NO.1 - NO.2.

[0023] The schedule which determines the sequence which supplies predetermined image data to each printer 15, and its timing is explained in detail. In addition, the printer was made into seven sets of NO.1 - NO.7 on account of explanation here.

[0024] The control in the case of printing 20 drawing 8 from the printer of NO.3, and printing ten sheets by the following print request is shown. In this case, it prints by each printer of NO.3 - NO.7 in order of a piece 8, a piece 11, a piece 14, a piece 17, and a piece 20, respectively. Next, it prints by the printer 15 of NO.1 - NO.7 in order of a piece 3, a piece 5, a piece 7, a piece 10, a piece 13, a piece 16, and a piece 19. Then, it prints by the printer of NO.1 - NO.7 further in order of a piece 2, a piece 4, a piece 6, a piece 9, a piece 12, a piece 15, and a piece 18, and, finally a piece 1 is printed by the printer of NO.1.

[0025] Thus, if it prints, [the tray of the printer of NO.1] It is put from a top in order of the photograph of the photograph piece 3 of the photograph piece 2 of a piece 1, is put upon the tray of the printer of NO.2 from a top in order of the photograph of the photograph piece 5 of a piece 4, and is put upon the tray of the printer of NO.7 from the top in order of the photograph of the photograph piece 20 of the photograph piece 19 of a piece 18. Therefore, if the recovery subsystem 17 recovers it from the bottom as the photograph in the tray of each printer is dipped up, a photograph is recoverable the order of the photograph of the photograph piece 20 of the photograph::piece 19 of the photograph piece 3 of the photograph piece 2 of a piece 1, i.e., in order of [of photography].

[0026] Next, when printing ten sheets, a print is performed from the printer of NO.2.

[0027] In addition, what is necessary is just to only print on condition of printing a piece 1 by the printer of NO.3 used first, and printing a piece 2 by the printer of following NO.4, by ****, if it is what does not need to collect photographs in order of photography. In this case, especially the recovery subsystem 17 is unnecessary and what is necessary is just to bring together the photograph acquired by each printer in one place by a shooter etc.

[0028] Drawing 9 shows control when an error occurs on the print of the 2nd sheet by NO.5 printer at the time of the print of 20 sheets. A re-schedule is performed at this time, the piece 12 and piece 13 which were due to be printed by the printer of NO.5 are printed by the printer of NO.6, and the printer 15 of NO.5 is excepted at the time of a next print.

[0029] The piece 12 and piece 13 which drawing 10 also shows the case where a print error

occurs to the 2nd sheet, and was not able to print on it by NO.5 printer on the occasion of a schedule are printed by the printer of NO.2 and NO.3.

[0030] Now, (A) of drawing 11 shows the conventional control, and carries out JPEG expansion of the image data of the read JPEG compression at bit map data. And after changing the color data of RGB into the color data of YMC suitable for a printer, when image data is transmitted to a printer and the transfer is completed, JPEG expansion is performed to the following image data.

[0031] In this conventional method, since it did not advance to the next processing but the large image data after expansion was moreover transmitted on the occasion of that transfer when it did not come out, after carrying out JPEG expansion and then transmitting that image data to the printer, the transfer time itself was long, and the printing time of two or more sheet number became long.

[0032] Since the described image processing circuit (36) which performs JPEG expansion and color conversion was given to each printer by this invention on the other hand as shown in (B) of drawing 11 , When the taken-in image data is transmitted to a printer, the following image data can be taken in, and since the data moreover transmitted is data by which JPEG compression (it compresses into about 1 / ten to 1/20) was carried out, the transfer time itself becomes extremely short compared with the transfer time shown in (A) of drawing 11 . Therefore, since each printer can be operated almost simultaneous, the printing time of two or more sheet number can be shortened sharply (since the movable number of a printer increases).

[0033] Drawing 12 is a controller 13 and the detailed block diagram of the printer sharer 14. The image data supplied as a parallel signal by Centronics is supplied to the printer sharer 14 via a controller 13. On the other hand, the serial signal by RS232C for communicating with the main part 12 of a notebook computer is taken into CPU13a in a controller 13, and the driving signal for controlling a printer 15, the ink changer 16, and the recovery subsystem 17 is created. The ink changer 16 and the recovery subsystem 17 are controlled by said controller 13.

[0034] In the printer sharer 14, Buffer 14a memorizes temporarily the image data supplied through the controller 13, and supplies it to each printer 15. Selector SEL2 choose the printer 15 to be used and selector SEL1 takes out the BIJII signal from the selected printer 15.

[0035] Drawing 13 is the figure having shown the flow of the mode of operation in this equipment. When it writes in with the print service M1 of a picture, there is a menu of service M2 and the print service M1 of a picture is chosen, the menu of the print service M3 of the data read from an above-mentioned card or an above-mentioned camera and the extra copy service M4 from the data of a storage device is shown. Selection of the data print service M3 will show the menu of the service M5 which carries out the package print of all the pictures,

and the print service M6 in which only a required picture makes extra copy selection. Selection of the package print service M5 will show selection of the package print service of all pictures, and the service which carries out the package print only of the picture which carried out marking.

[0036] A series of menu manipulation when choosing the mode of M1, M3, and M5 in order is shown in drawing 14 and drawing 15 . It writes in with the print service M1 of a picture shown in S1 at the time of standby, and the menu of service M2 is displayed. If the picture print service M1 is chosen, as shown in S2, directions will come out [setting storage devices, such as a memory card, a camera or a memory card, and]. If either is set, reading of image data will be performed and a display as shown in S3 will come out.

[0037] In a PC card, an image file may be remembered to be the case where an image file is memorized without directory structure by directory structure, and file structures differ the whole maker of a digital still camera. If a directory is specified in detail and you are trying to read a file, this print machine is user-unfriendly. So, in this embodiment, an image file is read from a root directory at first, subsequently a subdirectory is found, and the image file in the subdirectory is read. If a low-ranking subdirectory is one of the subdirectory, the inside of the subdirectory will be searched further. It enables it to read an image file by adopting such a searching method corresponding to various directory structures. It carries out, as well as this when reading from an MO disk.

[0038] Next, as shown in S4, the menu of the package printing mode M5 and the printing mode M6 of extra copy selection is displayed. If the package printing mode M5 is chosen here, as shown in S5, the menu of the package print service of all pictures and the service which carries out the package print only of the picture which carried out marking will be displayed. Even when which mode is chosen, as shown in S6 below, the size selection picture of a print paper is displayed. And as shown in S7, the print number of sheets and printing charge when printing at a time all the one piece (or piece which carried out marking) are displayed. It can also print two or more sheets at a time if needed. Directions of a print start will display the print necessary remaining time and the thing which made it the bar graph, as shown in S8. After a print is completed, a display as shown in S28 of drawing 19 explained later comes out.

[0039] A series of menu manipulation when choosing the mode of M1, M3, and M6 in order is shown in drawing 16 and drawing 17 . If the print service M1 of a picture chooses by S11 and a memory card, a camera, or the printing mode M3 from a storage device (super disk) is subsequently chosen If reading of image data is performed in S12 and the printing mode M6 of extra copy selection is chosen in S13, it will become the input waiting of whether marking is carried out to the picture like S14. as shown in the following S15, it is got married, come out and displayed as opposed to the picture to which a sum nail indication of all the pictures was given, and marking was carried out, but about marking, it can change on this screen.

Moreover, when you have no marking, a picture to print on this screen is chosen. In the following S16, extra copy number of sheets is specified to each picture to print. Next, as shown in S7, the size selection picture of a print paper is displayed. And as shown in S18, print number of sheets and a printing charge are displayed.

[0040] A series of menu manipulation when choosing the mode of M1 and M4 in order is shown in drawing 18 and drawing 19 . If the print service M1 of a picture chooses in S21 and the extra copy mode M4 from a storage device is subsequently chosen, as shown in S22, the folder in a storage device will be displayed. Specification of a folder to print here will give a sum nail indication of all the corresponding pictures, as shown in S23. A picture to print on this screen is chosen. In the following S24, extra copy number of sheets is specified to each picture to print. Next, as shown in S25, the size selection picture of a print paper is displayed. And as shown in S26, print number of sheets and a printing charge are displayed. As shown in S27, the print necessary remaining time and the thing which made it the bar graph are displayed. After a print is completed, a display as shown in S28 comes out.

[0041] A series of menu manipulation when choosing the mode of M2 is shown in drawing 20 and drawing 21 . Insertion of the storage device for preservation is instructed to be the medium into which it wrote in S31 and the picture which is service M2 to save when it chooses went. If predetermined operation is performed, image data to save as shown in S32 will be read. Next, since the list display of the folder of the storage device for preservation is carried out as shown in S33, the folder of a storage place is specified here. In the following S34, if the title of the picture to memorize is inputted, as shown in S35, it becomes the confirmation screen of a title, and the charge for record will also be displayed collectively. After storage of image data is started and the record is completed so that it may be displayed on S36, if it writes in here and a start is directed, the display of S37 and S38 comes out.

[0042] In the 1st embodiment described above, in order to avoid frequent ink exchange, when it is used on the average by each printer and becomes an ink piece by all the printers, ink exchange is performed collectively. If ink exchange is automatically performed by the ink changer 16, since ink exchange is comparatively performed for a short time even if an ink piece arises by all the printers during a print, it will not produce un-arranging. However, it becomes a cost hike for ink changer equipment. Moreover, in composition of not using an ink changer, all the ink exchange must be performed manually at once, and clearing work takes time, and since there is a problem of having to get a visitor to wait in the meantime, it is hard to realize composition without a sink changer.

[0043] So, in the 2nd embodiment of this invention, it changes to the function of the above-mentioned printer determination means (39) used, and has the function of a priority use printer determination means (39a). If the printer used is chosen so that the frequency in use of one set of the printer specified beforehand may become high, and an ink piece is generated by that

printer, this function will choose the printer used anew so that the frequency in use of printer another next may come in quantity.

[0044] In order to raise frequency in use, set up the printer (it is called a start printer) preferentially used at the time of a print, and a start printer For example, when it is considered as the printer of NO.1, it was always made to perform a print from the printer of the NO.1, and the printer became an ink piece -- coming -- for example, the printer of NO.2 is set as a start printer.

[0045] Operation of each printer based on this priority use printer determination is shown in the flow chart of drawing 22 . If a user inputs the print number of sheets of hope at Step S101, the print number of sheets will be set to N, and it will be confirmed at Step S102 whether each printer 15 is operation. It is judged at Step S103 whether there is any operation printer. When there is no operation printer, form supplement and ink exchange are performed at Step S104, and it returns to Step S102.

[0046] When there is a printer 15 of a working state, it progresses to Step S105 from Step S103, and the number of operation printers is set to P. At Step S106, when it is judged whether a start printer is an error and it is not an error, it progresses to 107, but in an error, at Step S108, the number of a start printer is incremented and the incremented number is anew set as a start printer. At Step S109, it is judged whether the number of the start printer at this time is over P. When progressing to Step S107 when not having exceeded, but having exceeded, the smallest number in an operation printer is set up as a start printer at Step S110, and it progresses to Step S107.

[0047] At Step S107, a start printer number is set as I. [in Step S111, the Ith printer is checked and it is judged at Step S112 whether it is an error, and] when it is an error the time of progressing to Step S113, and it being judged whether the Ith is a start printer, and being a start printer -- Step S114 -- the value of I is incremented, and the number of the incremented I is set as a start printer, and returns to Step S11.

[0048] On the other hand, in the judgment of Step S113, when the Ith is not a start printer, it progresses to Step S115, and when it is judged whether there is any operation printer and there is, at Step S116, form supplement or ink exchange is performed and it progresses to Step S107 after that. [no] On the other hand, when there is an operation printer in the judgment of Step S115, after the value of I is incremented at Step S117, it returns to Step S111.

[0049] In the judgment of Step S112, when the Ith printer is not an error, it progresses to Step S118 and image data is transmitted to the Ith printer. That transmitted image data of the point developed by bit map data from JPEG image data at the printer 15 side and the point which shifts to the processing to the following image data without waiting for processing of this data expansion is the same as that of the control ((B) of drawing 11) in a front embodiment.

[0050] At the following step S119, the value of I is incremented, when it is judged whether the value of I has exceeded the operation printer P [several] and it has exceeded at Step S120, it progresses to Step S121, and the smallest number in an operation printer is set as I, and it progresses to Step S122. On the other hand, when I has not exceeded P, it progresses to Step S122.

[0051] At Step S122, it is judged whether the decrement of the value of the ** print number of sheets N was carried out, and the value of N was set to 0 at Step S123, and when it returns to Step S111 when it is not 0, but it is 0 that is, since it means that the print of the number of sheets of choice was completed, this flow is ended.

[0052] The actual print operation based on the above control is explained according to drawing 23 . Here, in order to have set the printer 15 of NO.1 as a start printer to 12 sets of printers 15 and to give explanation easy, the printer which became an ink piece was used as the error printer.

[0053] When the print request of three sheets is in the 1st time, the printer 15 of NO.1, NO.2, and NO.3 is chosen as the printer used, and prints by those printers so that the start printer of NO.1 may be included preferentially. "ON" which is in [ON/19] in a figure here shows that the printer worked, and "19" shall show the ** print number of sheets after a print, and shall print each 20 printers after exchange of ink.

[0054] When it prints by the printer of NO.1 and NO.2 and the print request of five sheets is in the 3rd time so that the start printer of NO.1 may be preferentially included also in this case, when the print request of two sheets is in the 2nd time, it prints by the printer of NO.1 - NO.5.

[0055] Now, [when the print request of two sheets is in the 21st time, print by the printer of NO.1 and NO.2 similarly, but] Since ** print number of sheets is set to "0" when the printer of NO.1 is used, at the time of a next (the 22nd time) print, the printer of NO.2 is set as a start printer, the printer of NO.1 is used as an error printer, and the printer of NO.1 is excepted from the printer used. It shows that the error printer was canceled by ink exchange that ** print number of sheets is "20" by the printer of NO.1 at the time of the 23rd print.

[0056] Since ** print number of sheets is set to "0" at the time of the 22nd print as for the printer of NO.2 set as the start printer, at the time of the 23rd print, the printer of NO.3 is set as a start printer. Here, as setting sequence of a start printer, it is NO.1->NO.2->NO.3->. -- If it becomes like NO.11 ->NO.20 and ink exchange of the printer of NO.1 is carried out, the printer will be set as a start printer next.

[0057] In addition, [on the print based on the flow of drawing 22 , in order to simplify explanation, transmitted N image data for a print to the printer only in order, but] As the 1st embodiment described, the printed photograph is also recoverable in order of photography by controlling the sending-out place and the order of sending out of image data.

[0058]

[Effect of the Invention] As explained above, in order to perform Image Processing Division of this invention developing a compressed image by each printer side, When printing the picture of two or more sheets in parallel by two or more sets of printers, since the size of the image data transmitted to one set of a printer is small, the transfer time is short. And since another image data can be immediately transmitted to the following printer if the transfer ends, the time required which prints the picture of two or more sheets can be shortened sharply. Moreover, in the 1st embodiment (Claim 2) of this invention, since the printer of two or more set number was used averaging, when it becomes an ink piece and a form piece by all the printers, a supplement of ink and a form can be performed collectively, and the frequency of a maintenance can be reduced. furthermore, [the 2nd embodiment (Claim 4) of this invention] Since the printer specified beforehand is used preferentially and it was made to become an ink piece or a form piece previously by the printer Since it will be hard to produce an ink piece by all the printers simultaneously if it is made to perform a supplement of ink and a form each time to the printer, composition without an ink changer is also easily realizable.

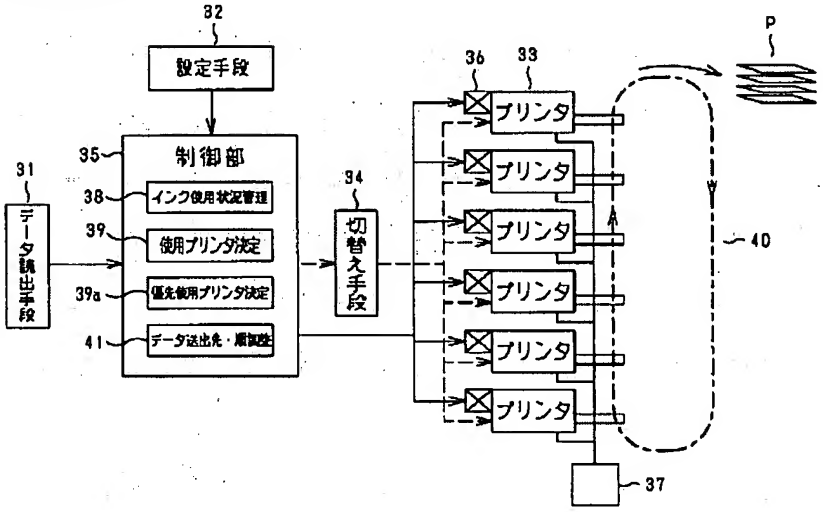
[Brief Description of the Drawings]
[Drawing 1] The figure corresponding to a claim of this invention
[Drawing 2] The external view having shown the digital printed matter machine of this invention

[Drawing 3] The external view having shown another form of the digital printed matter machine of this invention
[Drawing 4] The control-block figure having shown the 1st embodiment of the digital printed matter machine of this invention
[Drawing 5] The flow chart which showed the scheduling at the time of printing with the digital printed matter machine which becomes the 1st embodiment
[Drawing 6] The figure having shown the continuation of the flow chart of drawing 5
[Drawing 7] The figure having shown operation of each printer when printing two or more photographs
[Drawing 8] The figure having shown operation of each printer when printing two or more photographs
[Drawing 9] The figure having shown operation of each printer when printing two or more photographs
[Drawing 10] The figure having shown operation of each printer when printing two or more photographs
[Drawing 11] The timing diagram which showed the conventional technology and the

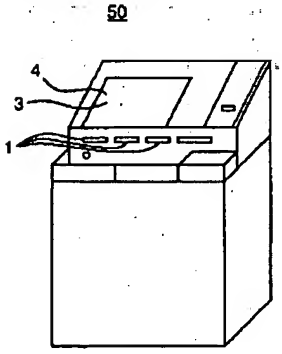
processing method of the image data in this invention
[Drawing 12] The controller in drawing 4 , and the detailed control-block figure of a printer sharer
[Drawing 13] The figure having shown the flow of each mode of operation in this equipment
[Drawing 14] The figure of the operating procedure shown in a drop in drawing 13 when Causses of the print from the print service of a picture, and a card/camera and a package print is chosen
[Drawing 15] The figure having shown the continuation of the operating procedure in drawing 14
[Drawing 16] The figure of the operating procedure shown in a drop in drawing 13 when Causses of the print from the print service of a picture, and a card/camera and extra copy selection is chosen
[Drawing 17] The figure having shown the continuation of the operating procedure in drawing 16
[Drawing 18] The figure of the operating procedure shown in a drop in drawing 13 when the print service of a picture and Causses of the extra copy from a storage device are chosen
[Drawing 19] The figure having shown the continuation of the operating procedure in drawing 18
[Drawing 20] The figure of the operating procedure shown in a drop in drawing 13 when Causses of write-in service is chosen
[Drawing 21] The figure having shown the continuation of the operating procedure in drawing 20
[Drawing 22] The flow chart which showed control of the digital printed matter machine which becomes the 2nd embodiment
[Drawing 23] The figure having shown operation of each printer when printing two or more photographs based on the flow of drawing 22
[Explanations of letters or numerals]
1 Loading Slot
3 Liquid Crystal Display
4 Touch Panel
11 Image Data Reader and Drive
12 Main Part Section of Notebook Computer
12a SCSI card
12b Modem card
13 Controller
14 Printer Sharer
15 Color Printer

16 Ink Changer
17 Recovery Subsystem
50 Digital Printed Matter Machine

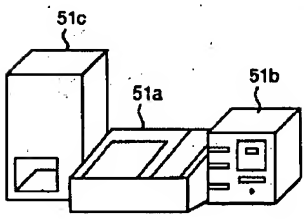
[Drawing 1]



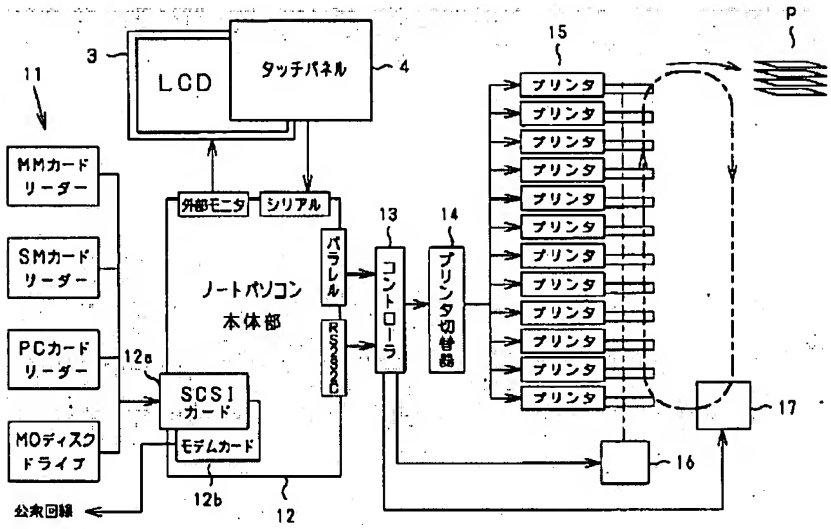
[Drawing 2]



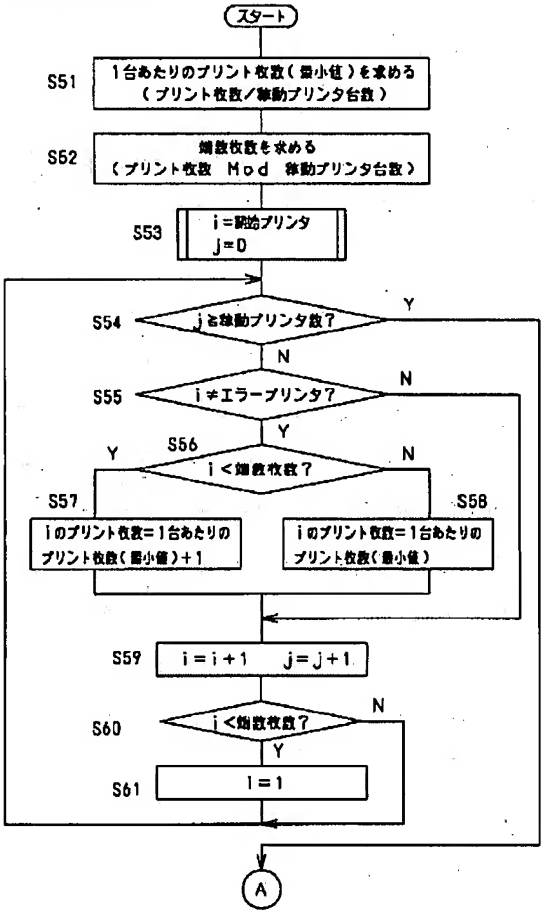
[Drawing 3]



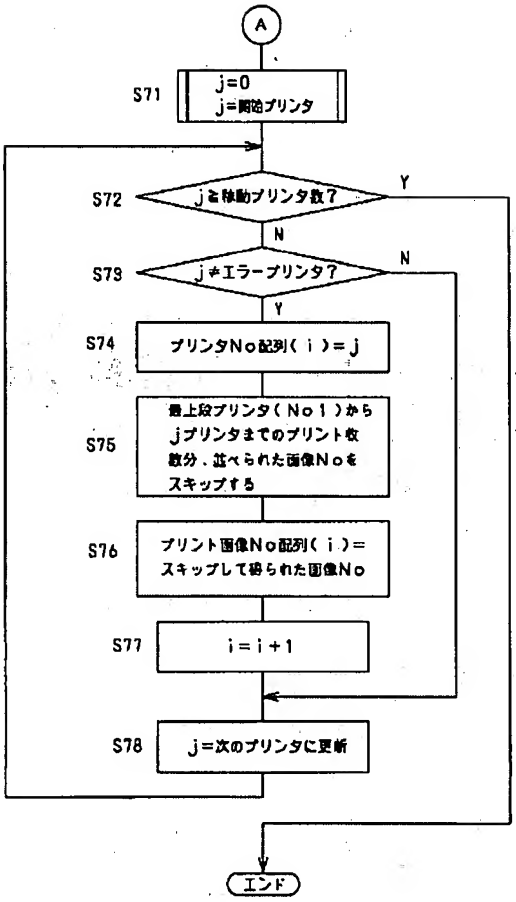
[Drawing 4]



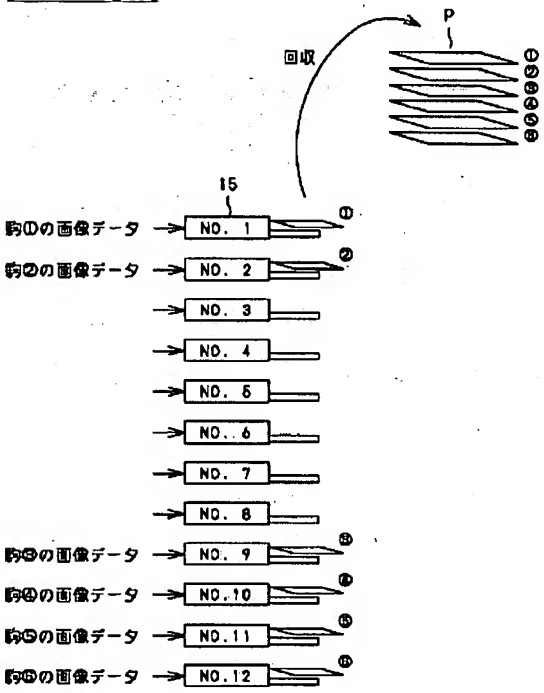
[Drawing 5]



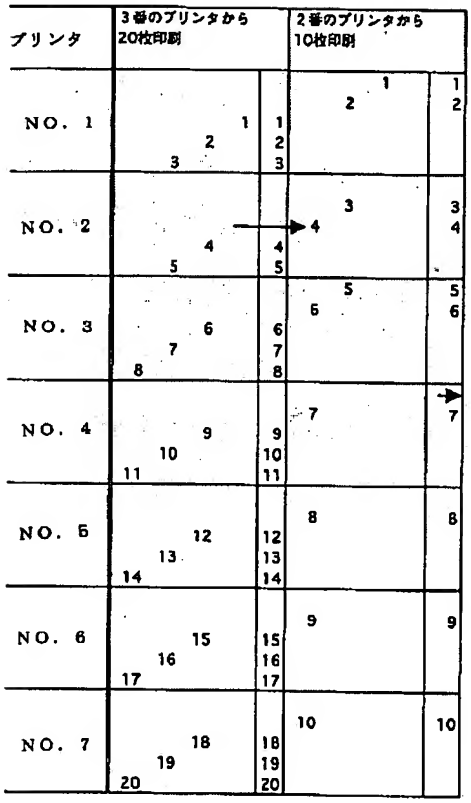
[Drawing 6]


A
S71
j=0
j=開始プリンタ
S72
j≧稼動プリンタ数?
Y
N
S73
j≠エラープリンタ?
N
Y
S74
プリンタNo配列(i)=j
S75
最上段プリンタ(No1)から
jプリンタまでのプリント枚
数分、並べられた画像Noを
スキップする
S76
プリント画像No配列(i)=
スキップして得られた画像No
S77
i=i+1
S78
j=次のプリンタに更新
エンド

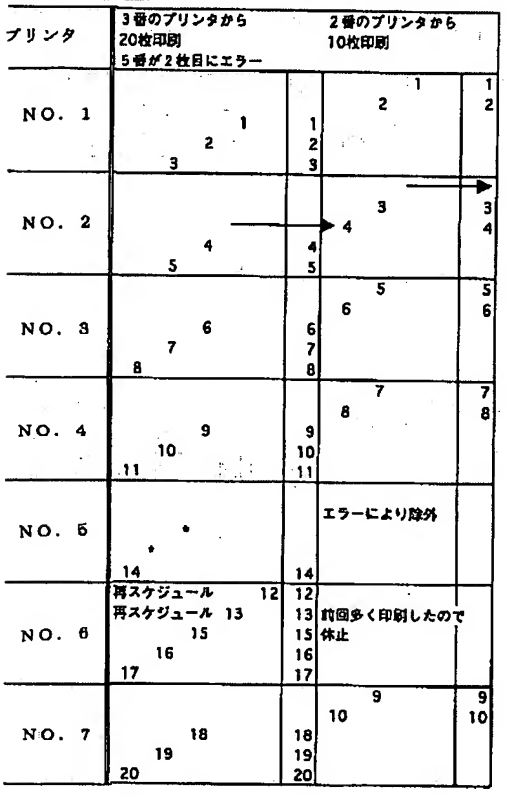
[Drawing 7]


回収
P
15
時①の画像データ
時②の画像データ
時⑨の画像データ
時⑩の画像データ
時⑪の画像データ
時⑫の画像データ
NO. 1
NO. 2
NO. 3
NO. 4
NO. 5
NO. 6
NO. 7
NO. 8
NO. 9
NO.10
NO.11
NO.12

[Drawing 8]



[Drawing 9]

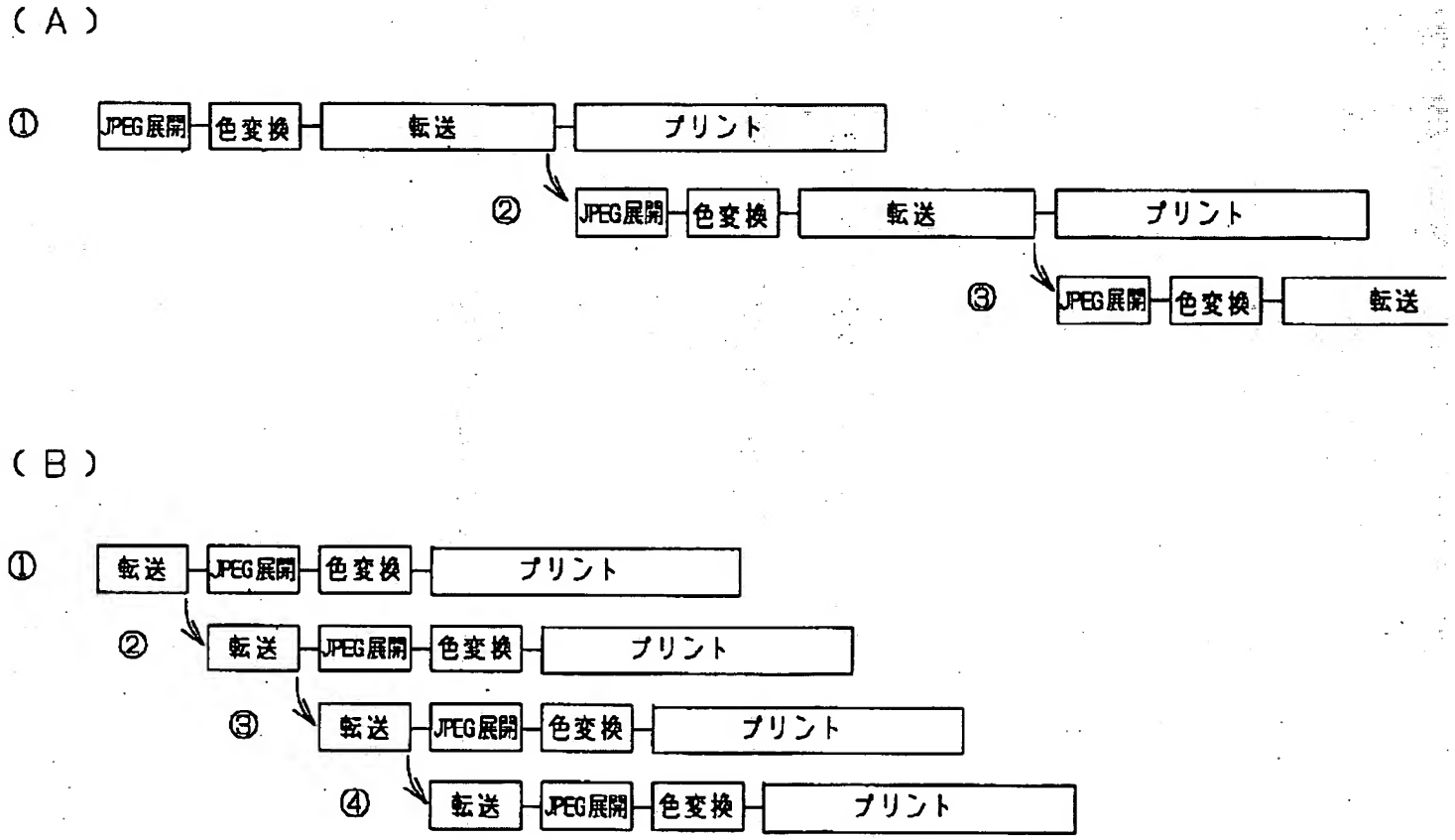


[Drawing 10]

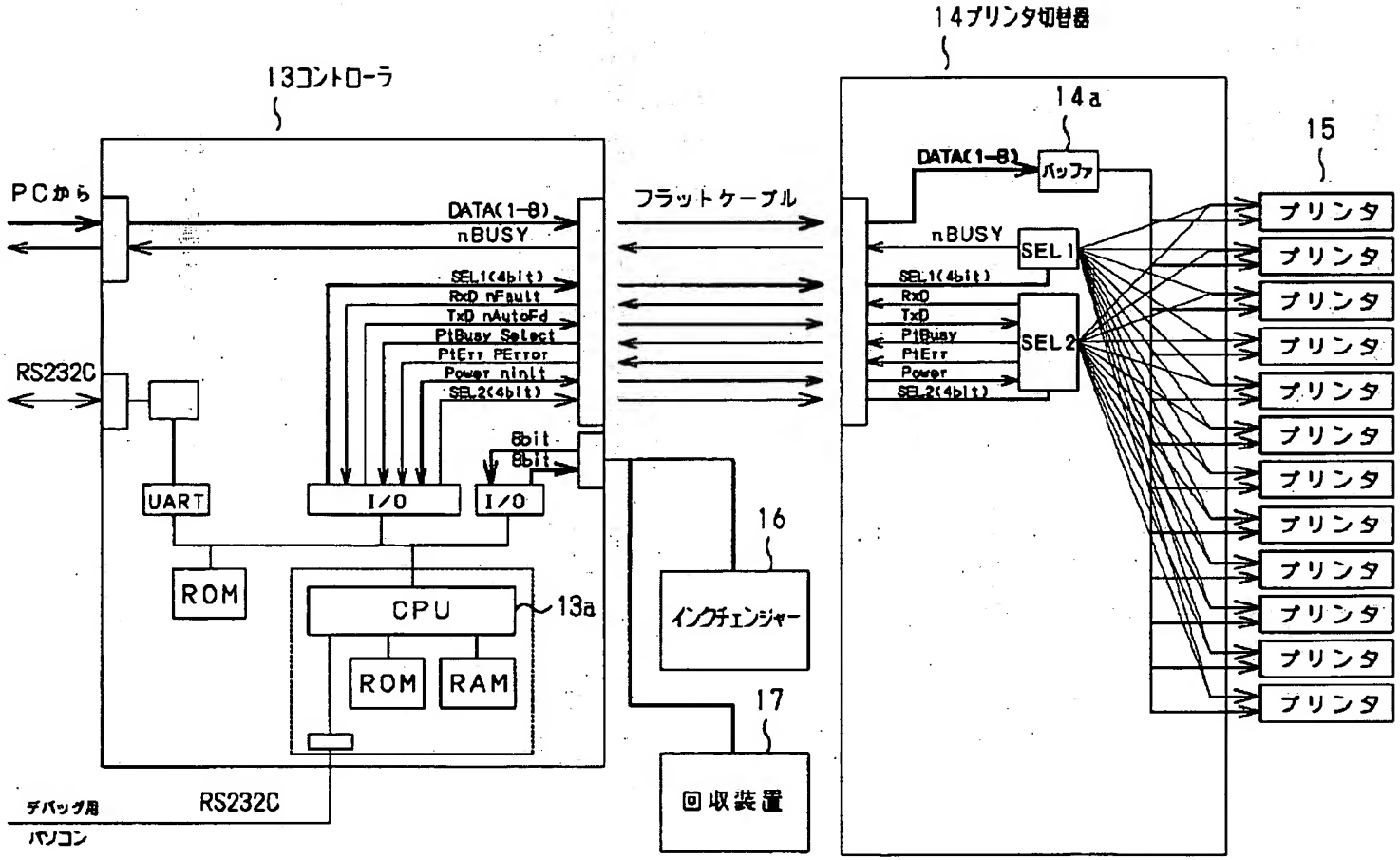
プリンタ	3番のプリンタから 20枚印刷 5番が2枚目にエラー		2番のプリンタから 10枚印刷	
NO. 1	1 2 3	1 2 3	1 2	1 2
NO. 2	再スケジュール 12 4 5	12 4 5	3	3
NO. 3	再スケジュール 13 6 7 8	13 6 7 8	4	4
NO. 4	9 10 11	9 10 11	5 6	5 6
NO. 5	14	14	エラーにより除外	
NO. 6	15 16 17	15 16 17	7 8	7 8
NO. 7	18 19 20	18 19 20	9 10	9 10

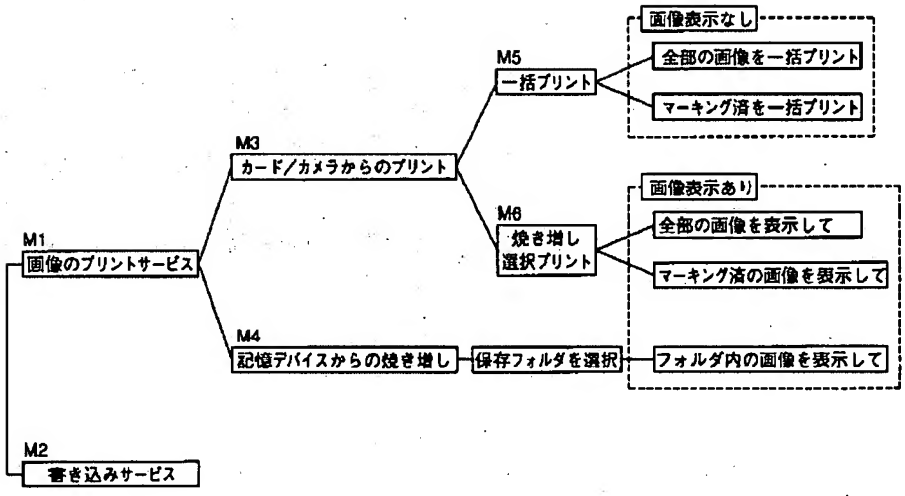
[Drawing 11]

[Drawing 12]

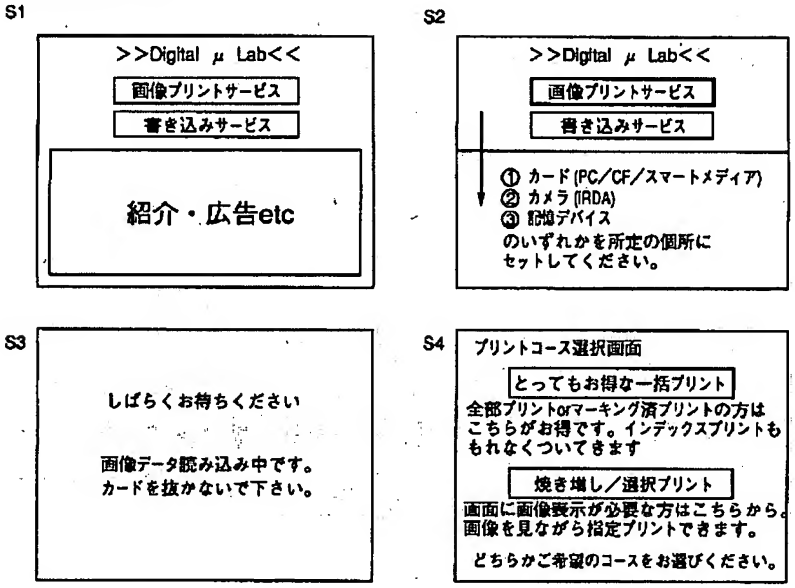

（Ａ）
①
JPEG展開
色変換
転送
プリント
②
JPEG展開
色変換
転送
プリント
③
JPEG展開
色変換
転送
（Ｂ）
①
転送
JPEG展開
色変換
プリント
②
転送
JPEG展開
色変換
プリント
③
転送
JPEG展開
色変換
プリント
④
転送
JPEG展開
色変換
プリント

[Drawing 13]

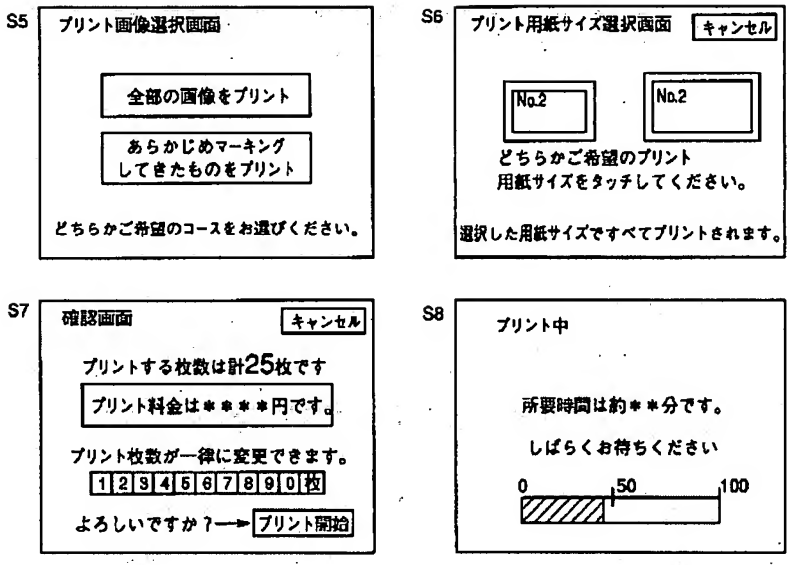

14プリンタ切替器
13コントローラ
14a
15
PCから
DATA(1-8)
nBUSY
SEL1(4bit)
RxD nFault
TxD nAutoFd
PtBusy Select
PtErr PError
Power ninit
SEL2(4bit)
RS232C
8bit
8bit
UART
I/O
I/O
ROM
CPU
13a
ROM
RAM
フラットケーブル
16
インクチェンジャー
17
回収装置
デバッグ用
パソコン
RS232C
DATA(1-8)
バッファ
nBUSY
SEL1
SEL1(4bit)
RxD
TxD
PtBusy
PtErr
Power
SEL2
SEL2(4bit)
プリンタ
プリンタ
プリンタ
プリンタ
プリンタ
プリンタ
プリンタ
プリンタ
プリンタ
プリンタ
プリンタ



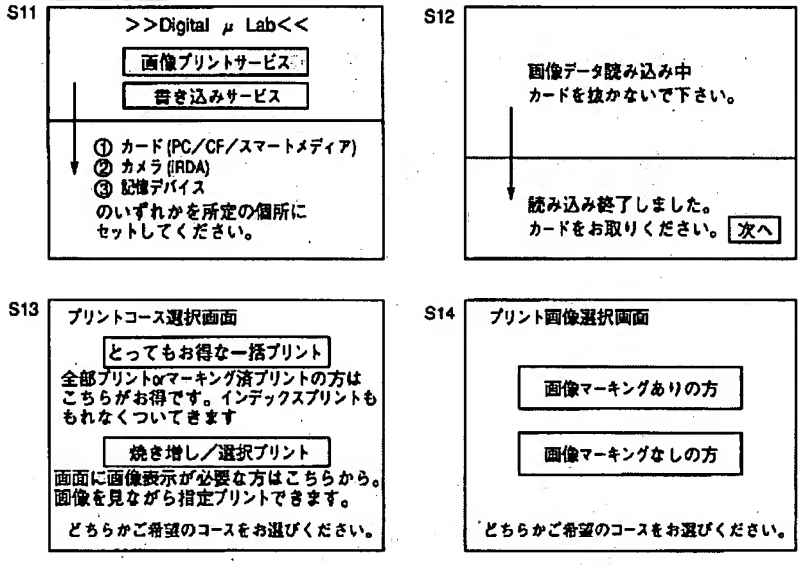
[Drawing 14]



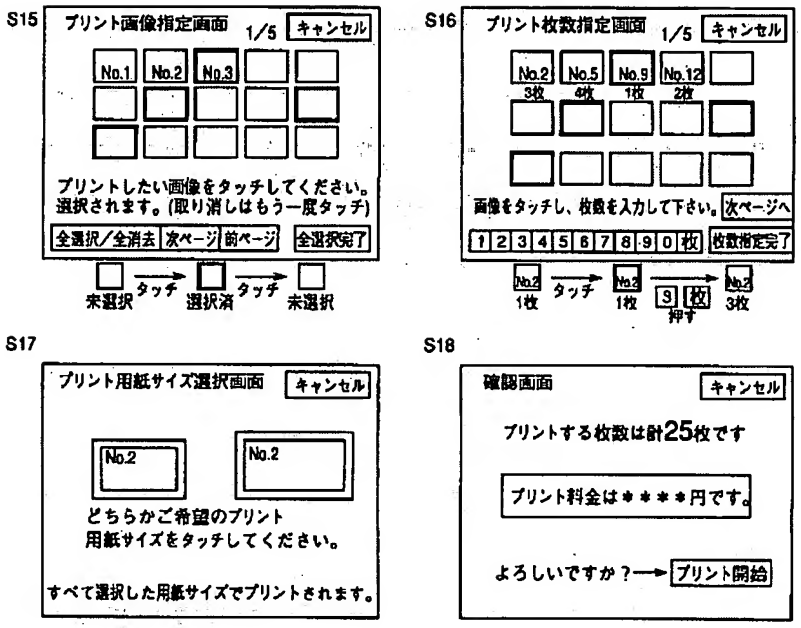
[Drawing 15]



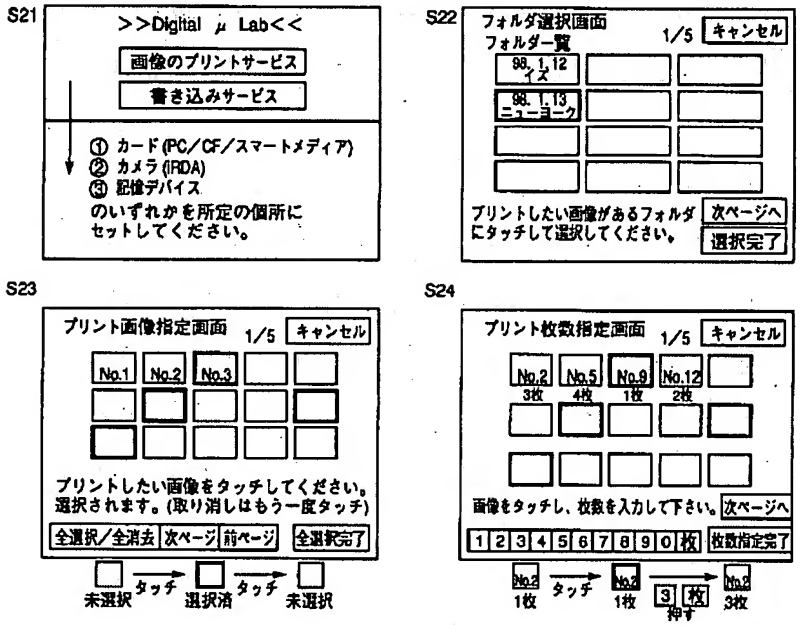
[Drawing 16]



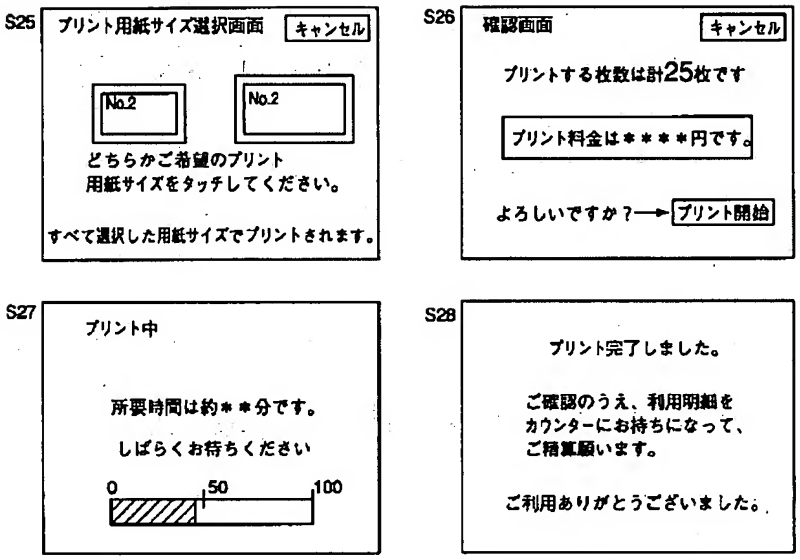
[Drawing 17]



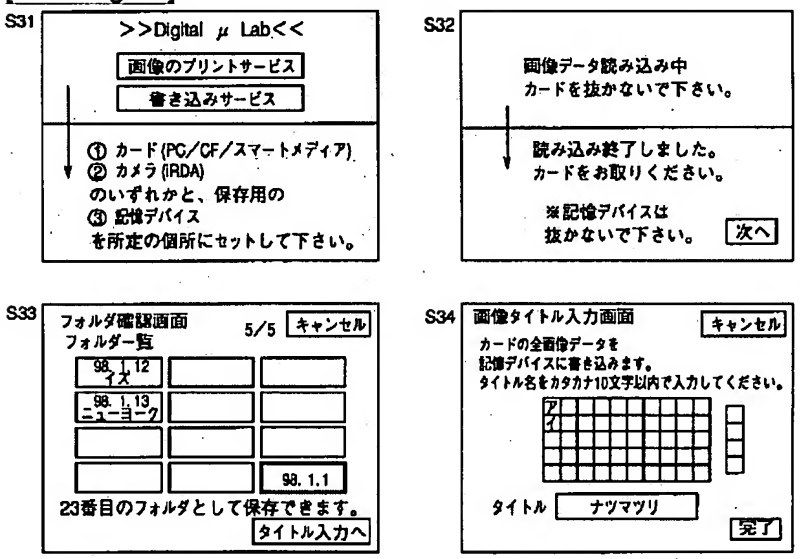
[Drawing 18]



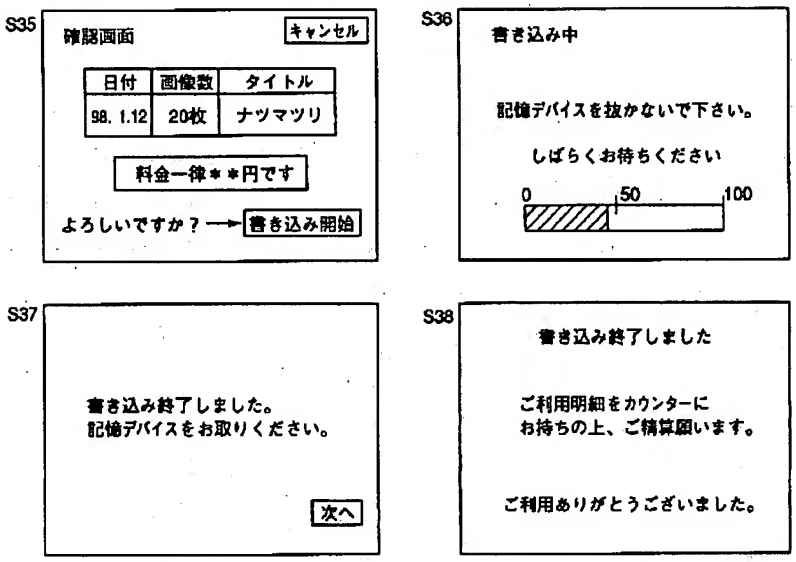
[Drawing 19]



[Drawing 20]



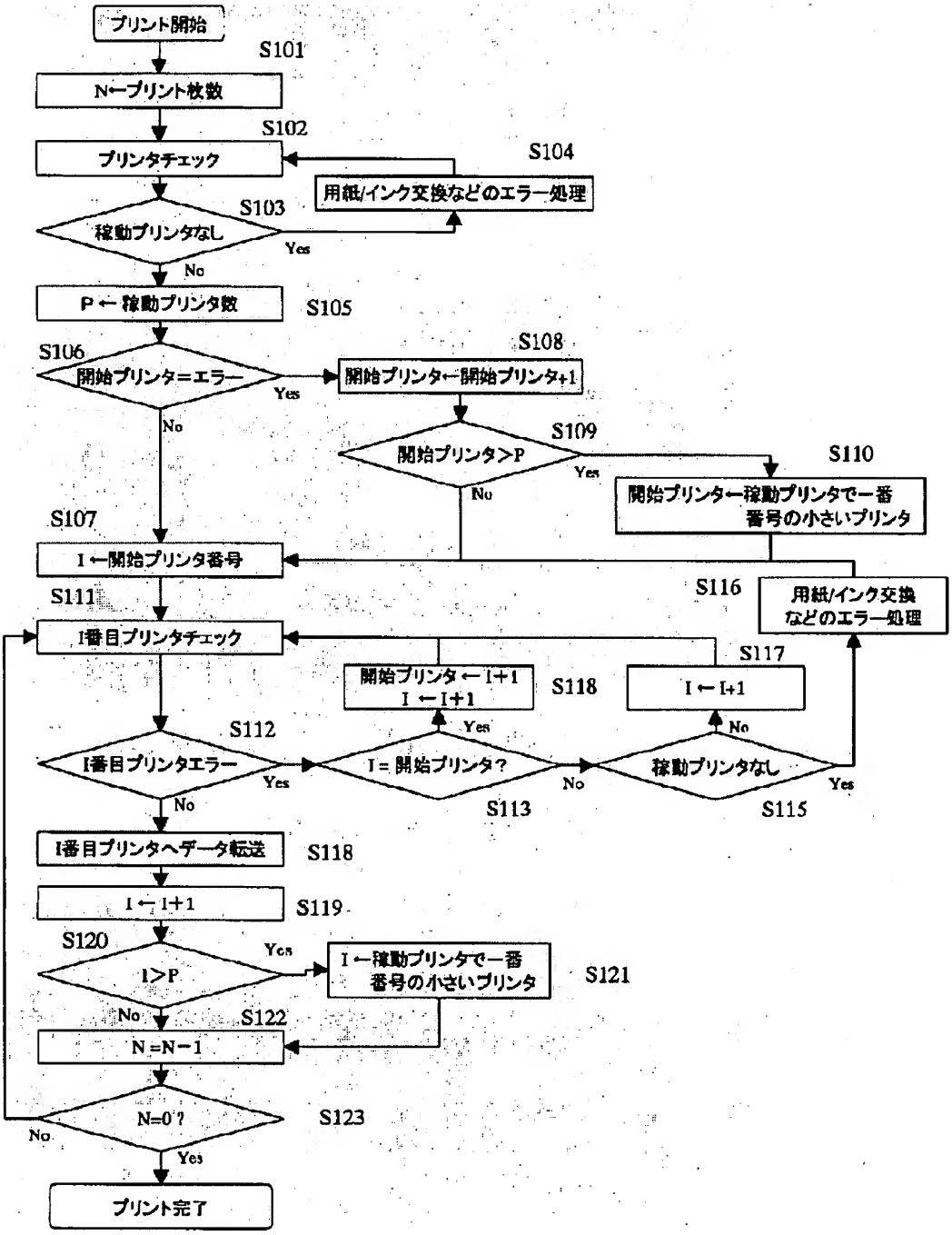
[Drawing 21]



[Drawing 23]

プリンタ	プリント枚数								
	1回目	2回目	3回目		20回目	21回目	22回目	23回目	24回目
	3	2	5	…	1	2	3	4	3
NO. 1	ON 19	ON 18	ON 17	…	ON 1	ON 0		20	20
NO. 2	ON 19	ON 18	ON 17	…	ON 2	ON 1	ON 0		20
NO. 3	ON 19	19	ON 18	…	ON 9	9	ON 8	ON 7	ON 6
NO. 4	20	20	ON 19	…	ON 14	14	ON 13	ON 12	ON 11
NO. 5	20	20	ON 19	…	19	19	19	ON 18	ON 17
NO. 6	20	20	20	…	20	20	20	ON 19	19
NO. 7	20	20	20	…	20	20	20	20	20
NO. 8	20	20	20	…	20	20	20	20	20
NO. 9	20	20	20	…	20	20	20	20	20
NO.10	20	20	20	…	20	20	20	20	20
NO.11	20	20	20	…	20	20	20	20	20
NO.12	20	20	20	…	20	20	20	20	20
開始プリンタ	1	1	1	1	1	1	2	3	3

[Drawing 22]



[Translation done.]